Claims

1. Method for transmitting control parameters (KN, PN, RV) on a physical channel (PK) between a mobile radio device and a base station in a cellular network for controlling a packet-oriented data transmission between the mobile radio device and the base station, with the control parameters (KN, PN, RV) including a packet number (PN) for identifying a data packet, characterized in that
the packet number (PN) is source-coded at least together with a further control parameter (KN, RV) for the transmission.

2. Method according to claim 1, characterized in that different time channels (K1, ..., K6) are available for sending the data packets, being implemented by a temporal distribution of the same physical channel (PK), with a data packet being re-transmitted on a time channel (K1, ..., K6) by the transmitting device in each instance, until the transmitting device receives a confirmation signal (ACK) from a receiving device.

3. Method according to claim 2, characterized in that at least one further control parameter (KN) includes the channel number (KN) of the time channel (K1, ..., K6), in which the data packet in question is sent.

4. Method according to claim 2 or 3, characterized in that so many different time channels (K1, K2, K3) are used as a maximum that the sum of the transmission time intervals (TTI) of the available time channels (K1, K2, K3) covers a round-trip time ($T_{RT}$), at the end of which a re-transmission can take place at the earliest on a specific time channel (K1, K2, K3)

after a previous transmission.

5. Method according to one of claims 1 to 4, characterized in that a number of re-transmissions of a data packet are superimposed to decode a data packet.

6. Method according to claim 5, characterized in that an incremental redundancy method is used during the data transmission and a least one further control parameter (RV) includes a redundancy version indicator (RV).

7. Method according to one of claims 2 to 6, characterized in that the data transmission takes place by means of a multi-channel HARQ transmission method (KN, PN, RV) and at least one further control parameter includes an HARQ parameter.

8. Method according to one of claims 2 to 7, characterized in that different numbers of packet numbers ($p_i$) are assigned to different time channels (K1, ..., K6), being available for identifying a data packet on the time channel (K1, ..., K6) in question.

9. Method according to one of claims 6 to 8, characterized in that different numbers of redundancy version indicators (RV) are assigned to different time channels (K1, ..., K6), being available for signaling the redundancy version of a data packet transmission on the time channel (K1, ..., K6) in question.

10. Method according to one of claims 2 to 9, characterized in that the number of packet numbers ($p_i$) and/or number of redundancy version indicators (RV) of at least one of the time

channels (K1, ..., K6) is/are variable.

11. Method according to claim 10, characterized in that the number of redundancy version indicators (RV) of the time channel in question is modified according to a predefined sequence at specific time intervals.

12. Method according to one of claims 2 to 11, characterized in that the number of packet numbers ($p_i$) and/or number of redundancy version indicators (RV) of at least one of the time channels (K1, ..., K6) is/are selected in each instance as a function of the current transmission situation.

13. Method according to one of claims 1 to 12, characterized in that transmission resources are allocated to a specific transmitting device taking into account the number of time channels (K1, ..., K6) used by the device in question and/or the numbers of packet numbers ($p_i$) and/or numbers ($N_{RV}$) of the redundancy version indicators (RV) of the different time channels (K1, ..., K6) of the device in question.

14. Method according to one of claims 8 to 13, characterized in that during selection of a time channel (K1, ..., K6) for a pending transmission of a data packet, the time channels (K1, ..., K6) are prioritized according to their numbers of packet numbers ($p_i$).

15. Method according to one of claims 2 to 14, characterized in that a packet number distribution function (P), which defines the numbers of packet numbers ($p_i$) assigned to the individual time channels (K1, ..., K6), is a monotonously increasing or monotonously decreasing function in respect of the channel numbers (KN) of the available time channels (K1,

…, K6).

16. Method according to one of claims 2 to 15, characterized in that a time channel (K1, …, K6) is selected for a pending transmission of a data packet according to a specific selection rule, taking into account when different combinations of channel numbers (KN) and packet numbers (PN) were last used.

17. Method according to one of claims 2 to 16, characterized in that a time channel (K1, …, K6) is selected for a pending transmission of a data packet taking into account temporal information relating to transmissions to date on the different time channels (K1, …, K6).

18. Method according to claim 17, characterized in that a time channel (K1, …, K6) is selected for a pending transmission of a data packet taking into account the use times to date of the different time channels (K1, …, K6).

19. Mobile radio device
with means for transmitting control parameters (KN, PN, RV) on a physical channel (PK) from the mobile radio device to a base station in a cellular network, for controlling a packet-oriented data transmission from the mobile radio device to the base station,
and a source-coding device, which source-codes the control parameters (KN, PN, RV) before transmission,
with the control parameters (KN, PN, RV) including a packet number (PN) for identifying a data packet,
characterized in that
the coding device is configured such that the packet number (PN) is source-coded at least together with a further control

parameter (KN, RV) for the transmission.

20. Base station
with means for transmitting control parameters (KN, PN, RV) on a physical channel (PK) from the base station to a mobile radio device in a cellular network, for controlling a packet-oriented data transmission from the mobile radio device to the base station
and a source-coding device, which source-codes the control parameters (KN, PN, RV) before transmission,
with the control parameters (KN, PN, RV) including a packet number (PN) for identifying a data packet,
characterized in that
the coding device is configured such that the packet number (PN) is source-coded at least together with a further control parameter (KN, RV) for the transmission.

21. Mobile radio device
with means for receiving control parameters (KN, PN, RV) on a physical channel (PK) from a base station to the mobile radio device in a cellular network, for controlling a packet-oriented data transmission from the base station to the mobile radio device
and a source-decoding device, which source-decodes the control parameters (KN, PN, RV), with the control parameters (KN, PN, RV) including a packet number (PN) for identifying a data packet,
characterized in that
the decoding device is configured such that the packet number (PN) is source-decoded at least together with a further control parameter (KN, RV).

22. Base station
with means for receiving control parameters (KN, PN, RV) on a physical channel (PK) from a base station to the mobile radio device in a cellular network, for controlling a packet-oriented data transmission from a mobile radio device to the base station, for controlling a packet-oriented data transmission from the mobile radio device to the base station and a source-decoding device, which source-decodes the control parameters (KN, PN, RV), with the control parameters (KN, PN, RV) including a packet number (PN) for identifying a data packet,
characterized in that
the decoding device is configured such that the packet number (PN) is source-decoded at least together with a further control parameter (KN, RV).